



Manufacturing LLC

Please read this Manual carefully
before using this product.



360SL

Monitors up to 38 different wheel positions

I. <u>Introduction to the Doran 360SL</u>	1
Components	2
Glossary of Terms	2
II. <u>Setup and Installation</u>	3
1. Monitor Installation	3
2. Lockout of Programming Modes	4
3. Programming the Monitor	4
A. Programming the Sensor Location	5
B. Baseline Pressure Programming	7
C. Programming the Date & Time for Stored Alarm History	8
D. Programming the Unit of Measure	10
E. Delete Sensor Location	11
F. High Pressure Alarm Programming	12
III. <u>Installing the Sensor on the Vehicle</u>	13
IV. <u>Alarm Modes</u>	16
A. First Stage Alarm for 12.5% Low	16
B. Second Stage Alarm for 25% Low	17
C. High Pressure Alarm	18
D. Lost Signal Alarm	18
E. HOT Warning Alarm	19
V. <u>Normal Mode Accessory Functions</u>	20
A. Drop and Hook Feature	20
B. System Reset Function	21
C. Stored Alarm Information	22
D. Backlight for Night Operations	22
E. Viewing individual tire position pressures	23
VI. <u>FAQs and Tips</u>	23
A. Frequently Asked Questions	23
B. Tips	26
C. Limited Warranty	26
D. Specifications	28
VII. <u>Optional Accessories</u>	29

The Doran **360SL** (SmartLink) is a full-time wireless electronic tire pressure monitoring system (TPMS) designed to monitor and display tire pressures for 38 wheel locations from 10 psi up to 188 psi on Over the Road Truck Fleets. The Doran **360SL** allows the Fleet Manager the advantage of Drop and Hook on all trailers equipped with Doran's SL Booster and wheel sensors. What this means is that you no longer have to have a specific system attached to each tractor and trailer combination. The SL monitor that is installed in the tractor will allow the driver to connect to any trailer equipped with the Doran SL system and be ready to monitor the pressures on the trailer along with the wheels on the tractor. It is capable of displaying current tire pressure on demand, whether moving or stationary. The **360SL** is a monitoring system and will not prevent tires from losing pressure or failing. However, low pressure is the leading cause of premature tire failure and the **360SL** can provide early notice of potential problems and assist in maintaining proper pressurization in vehicle tires. The **360SL** can be used on all pneumatic tires.

The **360SL** consists of three basic components: tire sensors which screw onto the valve stems of tires, a monitor, and the SmartLink Booster that attaches to the trailer and transmits the signals from the trailer tires. Sensors transmit a coded RF signal and alert if pressure drops. The Booster receives information for the trailer sensors and "teaches" the Monitor the trailer sensors information. The monitor displays each tire's pressure and an audible alert if tire pressures change beyond the set parameters. During an alert, the low tire location is displayed on the monitor, the monitor will display "LOW PRESSURE", the current pressure reading for that tire flashes, and an audible alert sounds. The system can alert at 2 low-pressure levels: The first alert occurs when pressures drop more than 12.5%. A second more urgent alert occurs if tire pressures drop more than 25%. Additional alerts that are built-in to the Doran **360SL** are the "Fast Leak" signal, "High Pressure" alert and the "HOT" Temperature warning for tire positions indicating a possible wheel component failure.

As with many RF products, signal interruption can occur and prevent a signal to reach the monitor. When used properly, the Doran **360SL** will inform the driver of the tire pressures and potential wheel problems on the vehicle so the operator has the opportunity to make any necessary adjustments to the air pressure or visual inspections before a serious problem occurs.



Tires and valve stems should be inspected thoroughly prior to installation of the system to ensure they are in good condition and inflated properly. It is not uncommon to find valve stems that need replacing when installing the **360SL** system. Doran recommends that rubber valve stems be replaced with metal stems. Some rubber stems have been found to be inferior and could fail prematurely.

A visual inspection of tires on a regular basis is recommended. The **360SL** does not prevent low tire pressure, it alerts when tire pressures are low, allowing action to be taken. A damaged Sensor or valve stem can cause pressure loss. Inspect regularly. If repeated faults are observed, discontinue use of the system and contact Doran Mfg. toll free at: 1-866-816-7233.

CAUTION The **360SL** cannot prevent tire/wheel overload. Overloading any tire is **extremely** dangerous and can cause the failure of **any suspension component**, not just tires! The **only** way to detect overloading is to weigh the vehicle! A vehicle should **never** be operated if the weight on any wheel is greater than the design specification! Even a correctly inflated tire can fail if overloaded.

CAUTION Tires can fail for other reasons besides low pressure or overloading. Always be on the alert for any **other** tire problems as indicated by unusual noises, vibrations, uneven tread wear, or bulges on the tire! If any of these symptoms occur, have the tires checked **immediately** by a professional!

SYSTEM COMPONENTS:

- (1) **360SL** Display Monitor W/power cord.
- (1) Sensor(s) for each tire.
- (2) Hook & Loop pads for installing Monitor.
- (1) Visor Clip & Hook and Lock Bracket.
- (1) Dill Pin Gauge.
- (1) Installation and Operation Manual.
- (1) 360 SmartLink Booster (purchased separately, not shown.)



If you are missing any of these components, **DO NOT** proceed with the installation. Contact the manufacturer for any missing or replacement parts.



Glossary of Terms:

Normal Mode: When monitor is monitoring all programmed sensors and there are not any faults, the monitor will display a green light and the display will show "ON".

Alert Mode: When the monitor has received a signal that is outside the parameters of the "Normal Operation", an alert will be displayed with icons describing the fault along with an audible beeping sound. Pressing the Set or Program buttons can turn off the audible alarm.

I. INTRODUCTION

DORAN

Baseline Air Pressure: This is the pressure that is programmed into the monitor to identify what the pressure is to be in each tire position. The monitor will calculate all alarms from this setting. The baseline pressure should ALWAYS be set when tires are at ambient temperature.

Ambient Temperature: This is the temperature of the outside air. Tires can heat up significantly which will change the pressure in a tire. If pressures in the tires are set when the tire temperature is elevated, it can cause the monitor to give alerts because when the tires cool the pressure will drop and sometimes this will fall 12.5% below the baseline pressure.

RF: The term used to identify Radio Frequency signals.

II. SETUP AND INSTALLATION

DORAN

1. Installing the Monitor

The **360SL** comes standard with the hook and loop mounting option. You can purchase the optional components to place the monitor on the sun visor, attach to the windshield, fasten to the dash, attach it using the pedestal mount, or you can use the supplied hook and loop pads to fasten the monitor to a flat surface. If you are using the hook and loop pads, we suggest that the surfaces that you are applying the pads to be cleaned with alcohol to remove any grease or oils that could be present. When you have decided on which rear panel for the monitor that will be correct for your application you can then remove the correct small breakaway spot on the chosen back panel for the wire to exit the monitor in the best direction for your application (see Figure 1-1).



Figure 1-1

A. There are three wires in the power cord. **Red** is the 12-volt positive constant connection. This should be connected to a 12-volt power source that is always “ON”. The Blue wire will be the “switched” 12-volt positive connection. This wire should only be live when the key is in the “ON” position. The **BLACK** wire is to be connected to a good ground. These connections will allow the monitor to receive signals when the vehicle is not running, and update the monitor in real time. When the key is turned on you will have the current information for your tire condition immediately before you begin your next trip.



The monitor is fused internally, however some installers would still prefer to install an inline fuse for precautions. We suggest an optional 2 or 3-amp Fast blow fuse be used for this purpose.

- B. The first time the monitor is powered up the display will show “NSP”. This is alerting that there are “No Sensors Programmed” to the monitor. It could be that the sensors that were programmed to the monitor have not reported in to the monitor in order to lock the sensors into the memory. If this is the case it could take up to 6 minutes for this to happen. If this is the first time you have attempted to install the system and the sensors have not been programmed into the monitor, the system will need to be programmed per the following section.



“SET” Used to lock in selections during programming. Used to turn on and off the backlight.

(4) Arrow buttons are used to navigate the screen and select values in the program mode

“PROG” Used to enter the program modes. Also used to silence alarms.

2. Lockout of Programming Modes

The Doran 360SL comes with a feature that allows the monitor to be “Locked Out” from all programming modes. This is done to keep unauthorized personnel from changing any of the programmed parameters. The lockout of the **PROG** button is accomplished in the following manner.

- Be sure that the ignition is off.
- Press the up and down arrow buttons along with the **PROG** button for approximately 3 second until the monitor displays a “L” for locked, or a “U” for unlocked.
- The monitor will display the letter for 3 second and then disappear. When the “L” has been displayed it will cause the **PROG** button to only be used to silence an alarm. Programming functions will not be accessible when the monitor is in this mode.
- To be able to enter into the programming modes and change the parameters of the monitor the procedure will need to be repeated so the “U” is displayed to signify that this mode has been unlocked.

3. Programming the Monitor

For the monitor to function effortlessly, the user must install the correct data. The information input to the monitor will allow the monitor to recognize the sensors and wheel positions as well as the baseline pressures for all tires on the tractor (only sensors on the tractor can be programmed to the monitor thru the monitor). Trailer sensor’s information will be transferred to the

monitor by way of the SmartLink Booster (See instruction manual for programming the SmartLink Booster). Programming the Tractor Sensors is done in the following method. **Do not install sensors until all programming is completed and you have returned to the normal operation mode.**

A. Programming the Sensor location

1. Be sure that the power is on. The first time the monitor is switched on, the display should show “NSP”. This will signify that no sensor is programmed, or the monitor has not received a new sensor signal yet. If this is the case it could take up to 6 minutes for the sensor to report in if it is already attached to the valve stem. You will now need to enter into the programming mode if you need to add sensors to the monitor. If you are entering new sensors into the monitor be sure to leave the sensors off of the valve stems until the programming is complete.
2. Press and hold the **PROG** button for approximately 3 seconds. The monitor screen will automatically change over to the program mode, and then you can release the button. When you have entered this mode the monitor will display all of the tire positions available on the tractor and the word “PROG” will be displayed (see **Figure 2-1**). As you will see by Figure 2-1 the monitor is set up to display the tractor only in this mode.
3. The 3-digit serial number located on the sensor will need to be programmed into the monitor (see **Figure 2-2** for the three-digit number). The monitor will automatically capture the serial number and information when air pressure is supplied to the sensor for that wheel position and lock it into the monitor once the three-digit number is programmed into the monitor. Be sure to keep the sensors identified as to which wheel positions they belong so that you can attach the sensors to their proper location for future reference. We suggest that you use the enclosed Quick Reference card to identify sensor locations. If you have two sensors that have the same last three-digit serial number you will not be able to install these on an initial installation. Both sensors can be used but the second sensor cannot be installed until the first sensor has been received and recognized by the monitor. After the first sensor is installed and recognized in the monitor the second sensor can then be added. Use the diagram included in the system to record the 3 digit numbers onto the wheel locations that you will be selecting for the tractor.
4. Using the arrow keys select the first tire position that you want to program. The selected wheel location will be solid. The other wheel positions will only be an outline.

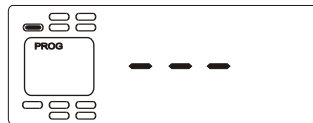


Figure 2-1



Figure 2-2

If sensors have already been programmed to the monitor, the only sensor locations that will be displayed will be the ones that do not have a sensor already programmed to it. When you have selected the position that you want to program a sensor to, press the **SET** button for 3 seconds. This will cause the first dash (see **Figure 2-3**) of a three-digit sensor number to blink that will need to be entered.

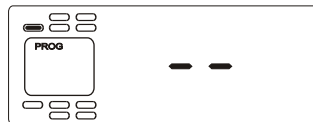


Figure 2-3

5. Using the up and down arrow buttons, change the first digit to the first corresponding digit of the sensor ID number that you want to program. When you have selected the correct digit, press the right arrow button to move to the next digit in the display.
6. The center dash (-) of this digit will now blink (see **Figure 2-4**). Use the up and down button to change this digit to the number needed for the second digit of the sensor. When you have selected the correct number for the center section of this number press the right arrow button so the remaining dash (-) begins to flash of the three-digit number (see **Figure 2-5**).
7. Adjust this position with the up and down button until you have the correct number displayed. Pressing the right or left arrow button will allow you to change one of the numbers that you have previously selected if needed.
8. If you have the correct number displayed, press the **SET** button for 3 seconds until the number flashes twice and you hear a beep twice to signify that the sensor ID number was successfully input to the monitor (see **Figure 2-5a**).
9. A new position will be highlighted to input another serial number. If you wish to program another sensor repeat the above steps in Section A.
10. Once you have completed the sensor programming sequence for all tires, press the **PROG** button momentarily to move to the next step, this will be the BaseLine Pressure Programming. The monitor will display as shown in Figure 2-6. If you are completely done with all of the programming operations you can press the **PROG** button for 3 seconds and the monitor will return to the normal mode of operation. This can be done at the end of any section of the program mode when the programming is completed.

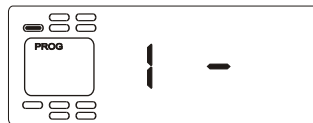


Figure 2-4



Figure 2-5



Figure 2-5a

B. Baseline Pressure Programming

NOTE: To enter directly into this program mode you will need to press the **PROG** button for 3 seconds until the “PROG” is displayed. Then press the **PROG** button again briefly to enter this mode (see Figure 2-6 for screen display).



Figure 2-6

NOTE: To skip this section and go directly to the **Programming the Date and Time for Stored Alarm History Information** just press the **PROG** button briefly 1 time. The display should look like Figure 2-7. Anytime during this mode you can escape out to the next program mode by pressing the **PROG** momentarily.

The baseline pressure has been set in the factory at 100-psi for all wheel positions.



We recommend that you set the baseline pressure at the same pressure as your recommended Manufacturers' Operating Tire Pressures for each vehicles tire being monitored. If you want to change the baseline pressure, or a new sensor is programmed, then follow the procedure below.

The monitor should now be displaying the wheel positions available to program, the words **PRESSURE**, the unit of measure (**PSI**, **Bar**, or **kPa**) and **PROG** will be displayed as well as the baseline pressure for the selected wheel position (**see Figure 2-6**). The positions that already have sensors programmed to the monitor will be highlighted at this time. You can program the air pressure from 10 PSI to 188 PSI, depending on your needs. The baseline air pressure for the trailer tires are automatically transmitted to the monitor thru the SmartLink Booster when the trailer is connected. Each wheel position of the tractor can be set with a different baseline air pressure if this is what is needed. The monitor has been pre-programmed for 100 PSI at each wheel position for the tractor. If this is the baseline air pressure that you need then you will not have to do anything in this mode and can press the **PROG** button and go to the next step. If you need to change the baseline air pressure for any wheel positions on the tractor, continue with steps 1-4 below:

1. Using the same procedure as done previously, use the arrow buttons to select a wheel position on the tractor and press the **SET** button for 3 seconds. This will cause the first dash or number to blink of a three-digit baseline pressure number that will need to be entered for the tire position selected.
2. The first digit of the three dashes will automatically start to flash. To adjust the air pressure for the first digit press the up or down arrow button to change the number. For a number less than 100 you will need to start your number with a 0. For the air pressure of 95 PSI your inputted number for the baseline pressure would be entered as “095”.

3. Press the left or right arrow button to select the next digit. Use the up and down arrow buttons to change that digit. When you have entered the number that you want, press the **SET** button for 3 seconds until the number flashes twice and a double beep is heard to signify that the number has been locked into the monitor's memory.
4. A new position will be highlighted to input a baseline air pressure. If you wish to program another sensor repeat the steps 1 thru 3. If you have completed the sensor baseline air pressure programming sequence then you can press the **PROG** button momentarily to move to the Time and Date-stamp setting mode. If you are done with the programming operation you can press the **PROG** button for 3 seconds and the monitor will automatically return to the normal mode of operation. This can be done in any section of the program mode when the programming is completed.

C. Programming the Date and Time for Stored Alarm History Information

NOTE: To enter directly into this program mode you will need to press the **PROG** button for 3 seconds until the "PROG" is displayed. Then press the **PROG** button again briefly 2 times to enter this mode (see Figure 2- 7 for screen display).



Figure 2-7

NOTE: To skip this section and go directly to the Programming the Units of Measure just press the **PROG** button briefly 1 time. The display should look like Figure 2-8. Anytime during this mode you can escape out to the next program mode by pressing the **PROG** momentarily.

At this point you can press the up or down arrow buttons to get to the portion of the date stamp that you want to adjust. Look below for each segment and see how to adjust them or you can go thru the entire sequence starting with number 1.

1. The first thing that you will adjust is the Year (Y).

Pressing the **SET** button for 3 seconds will cause the center digit after the Y to flash. This should remain a 0 until the year 2010, and then it will be changed to a 1. Pressing the up and down arrow buttons will adjust the value of this digit. When you have selected the number that you want, press the right button to adjust the right digit in the same manner with the up and down arrow buttons. When you have the proper number displayed for the year (Y) press and hold the **SET** button for 3 seconds until the monitor beeps twice and the display flashes twice. The monitor will now display like **Figure 2-8**.



Figure 2-8

2. **To adjust the Month (M)** you will need to press and hold the SET button until the center digit flashes. The months will be displayed as (01) for January thru (12) for December. Pressing the up and down arrow buttons will adjust the value of this digit. When you have selected the number that you want press the right button to adjust the right digit in the same manner with the up and down arrow buttons. When you have the proper number displayed for the Month (M) press and hold the SET button for 3 seconds until the monitor beeps twice and the display flashes twice. The display is shown like **Figure 2-9**.



Figure 2-9

3. **To adjust the day (d)** you will need to press and hold the SET button until the center digit flashes. Pressing the up and down arrow buttons will adjust the value of this digit. When you have selected the number that you want press the right button to adjust the right digit in the same manner with the up and down arrow buttons. When you have the proper number displayed for the day (d) press and hold the SET button for 3 seconds until the monitor beeps twice and the display flashes twice. The display is shown like **Figure 2-10**.



Figure 2-10

4. **To adjust the hour (h)** you will need to press and hold the SET button until the center digit flashes. Keep in mind that the hour will be displayed as a 24-hour clock. An example is that 3:00 in the afternoon will be shown on the clock as h15. Pressing the up and down arrow buttons will adjust the value of this digit. When you have selected the number that you want press the right button to adjust the right digit in the same manner with the up and down arrow buttons. When you have the proper number displayed for the hour (h) press and hold the SET button for 3 seconds until the monitor beeps twice and the display flashes twice. The display is shown like **Figure 2-11**.

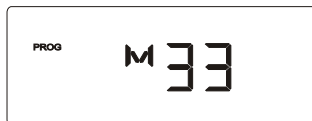


Figure 2-11

5. **To adjust the minute (m)** you will need to press and hold the **SET** button until the center digit flashes. You will notice that the Month uses a capital M and Minute uses a short (m). Pressing the up and down arrow buttons will adjust the value of this digit. When you have selected the number that you want, press the right button to adjust the right digit in the same manner with the up and down arrow buttons. When you have the proper number displayed for the Minute (m) press and hold the **SET** button for 3 seconds until the monitor beeps and the display flashes twice. The display is shown like **Figure 2-12**.



Figure 2-12

6. **This will have brought you back to the (Y) years setting.** Press the **PROG** button momentarily to move to the Pressure Units Programming Mode (see **Figure 2-13**). If you are done with the programming operation you can press the **PROG** button for 3 seconds and the monitor will automatically return to the normal mode of operation. This can be done in any section of the program mode when the programming is completed.



Figure 2-13

D. Programming the Unit of Measure

NOTE: To enter directly into this program mode you will need to press the **PROG** button for 3 seconds until the “**PROG**” is displayed. Then press the **PROG** button again briefly 3 times to enter this mode (see **Figure 2-13** for screen display).

NOTE: To skip this section and go directly to the Sensor Deletion mode just press the **PROG** button briefly 1 time. The display should look like **Figure 2-16**. Anytime during this mode you can escape out to the next program mode by pressing the **PROG** momentarily.



Figure 2-14



Figure 2-15

The next step in the programming mode is to select the unit of measure for the air pressure for any wheels being monitored. The monitor is set from the factory to read in PSI (pounds per square inch), which is the default unit of measure. The monitor is also capable of displaying the air pressure in BAR and kPa (see **Figure 2-14 and 15**).

If you want the monitor to read in PSI then nothing needs to be done except to press the **PROG** button to move into the next section of the programming mode. To change the units of measure do the following.

1. Press the left or right arrow to select the words PSI, BAR, or Kpa.
2. When you have your selection press the **SET** button for three seconds and the selection should blink twice and the beeper should beep twice to confirm the selection in the monitor's memory.
3. Press the **PROG** button to exit this mode and enter into the Delete Sensor Location mode next. If you are done with the programming operation you can press the **PROG** button for 3 seconds and the monitor will return to the normal mode of operation. This can be done in any section of the program mode when the programming is completed.

E. Delete Sensor Location

This step is only used when a sensor is to be removed from the memory of the monitor for the tractor. This would be used to remove a sensor from one position and locate it to a different location, or to remove a sensor. If deleting a sensor is not necessary at this time, please see the second note below:

NOTE: To enter directly into this program mode you will need to press the **PROG** button for 3 seconds until the "PROG" is displayed. Then press the **PROG** button again briefly 4 times to enter this mode (see Figure 2-16 for screen display).

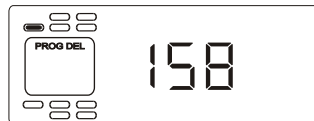


Figure 2-16

NOTE: To skip this section and go directly to the High Pressure Alarm Programming mode just press the **PROG** button briefly 1 time. The display should look like Figure 2-19 or 2-20. Anytime during this mode you can escape out to the next program mode by pressing the **PROG** momentarily. If you want to return to the normal operation mode press and hold the **PROG** button for 3 seconds.

The monitor will display the available sensors to delete and the word DEL will be displayed on the screen (see Figure 2-16). If a sensor does not need to be deleted you can just press the **PROG** button to go into the final program mode. If a sensor will need to be deleted you will need to do the following steps:

1. Using the arrow keys, select the desired sensor that needs to be deleted. The monitor will only display the wheel positions that have a sensor programmed to that position on the tractor. When you select a position the three-digit number that was programmed will be displayed so you will be able to verify that this is the correct serial number to delete (**see Figure 2-17**).
2. When you have selected the location press and hold the **SET** button for three seconds. The three-digit number will flash twice and the beeper will beep twice to confirm that this position has been deleted. A different position will be displayed and the tire location that was deleted will now be gone (**see Figure 2-18**).
3. If you have additional sensors that need to be deleted repeat the steps until all required sensors are deleted. If you need to program deleted sensors to a different location, or add new sensors to the monitor's memory simply press the **PROG** button twice to enter into the Programming Sensor Location mode (see page 5).
4. When you are finished press the **PROG** button to enter into the HIGH PRESSURE program mode, which is the last item to program. If you are done with the programming operation you can press the **PROG** button for 3 seconds and the monitor will return to the normal mode of operation. This can be done in any section of the program mode when the programming is completed.



Figure 2-17

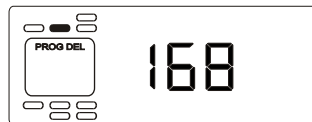


Figure 2-18

F. High Pressure Alarm Programming

NOTE: To enter directly into this program mode you will need to press the **PROG** button for 3 seconds until the “PROG” is displayed. Then press the **PROG** button again briefly 5 times to enter this mode (see Figure 2-19 for screen display).

NOTE: To exit this mode, press the **PROG** button for 3 seconds to return to normal operation mode.



Figure 2-19

The HIGH PRESSURE PROGRAM mode will allow you to set up your monitor to alarm if a pressure that is 25% higher than the baseline pressure is detected. This feature can assist in the checking of elevated heat in the tire. Pressures increase with elevated temperature. The monitor will display HIGH, PRESSURE, and PROG and the center of the screen will display “ON or OFF” (see **Figure 2-19 and 2-20**). To turn on or off this feature do the following:

II. SETUP AND INSTALLATION

DORAN

1. Using the left and right arrow buttons you will be able to turn this feature on and off as it is shown in the center of the display.
2. When your selection has been made, the **SET** button will need to be pressed for three seconds to lock the selection into the memory of the monitor.
3. Pressing the **PROG** button briefly will rotate you back through the different programming modes. If you are done with the programming operation you can press the **PROG** button for 3 seconds and the monitor will automatically return to the normal operation mode. This can be done in any section of the program mode when the programming is completed.

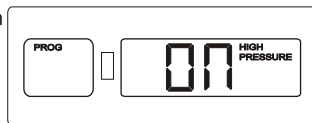


Figure 2-20

III. INSTALLING THE SENSOR ON THE VALVE

DORAN

The monitor should now be turned on and it should be in the normal operation mode.



It could take up to six (6) minutes for the monitor to receive the updated signal from the sensors once the monitor has been activated if the monitor was powered down.



Be sure to inspect and replace any defective or cracked valve stems before installing the sensors. If replacements are necessary we suggest replacing the valve stems with a metal stem. It does improve the life of the stem due to premature failure from drying out and cracking. Inferior stems have been found in the market and can cause extensive damage. The dill valve at each tire position should now be checked to see if it is in the proper position to allow the sensors to be activated by the air pressure from the tires. This can be done using the enclosed Dill Pin Gauge (see **Figure 3-1**). When the gauge is used it should depress the dill pin enough to allow air to escape the valve stem (see **Figure 3-2**).



Figure 3-1



Dill
Pin

Figure 3-2

If air does not escape from the valve stem, then you must use a valve stem tool to adjust the dill pin out far enough to allow the dill pin tool to release air from the valve stem. The dill pin should not be extracted to the point that air is released all the time from the valve stem. This should be checked with a bit of soapy water if you do make an adjustment to the dill valve and after the sensors have been installed.

Keep in mind that tire pressures will increase as you drive. When tires are in motion, the sidewalls are under stress carrying the load of the vehicle. This energy created by the tires develops heat, which causes the air in the tires to expand. This can cause air pressure to increase as much as 10 psi in certain applications. This is normal, and the manufacturer's recommended cold running pressures have

already taken this into consideration. Always adjust air pressure when tires are cold or ambient to the baseline pressures that were programmed into the monitor for each wheel position. Cool temperatures and high altitudes can cause tires to lose pressure. If a tire is close to its low-pressure level, an alert can be sounded when pressure drops overnight due to cooler temperatures. Inflate to proper level in the morning. If sensors have not been programmed to the monitor, or signals received by the monitor after first installed the screen will display “NSP” (see Figure 3-3).



Figure 3-3

1. If the sensors have been programmed to the monitor you will now need to install the sensors onto the proper wheel positions on the vehicle.



The sensor should be tightened only by hand, not with a tool. Use a firm grip and tighten the sensor. Check for leaks with a soapy solution. The monitor will begin to receive and recognize the sensors, and it will display the wheel positions as they are received on the screen.

2. When all the sensors that have been programmed to the monitor are received and within the baseline air pressure parameters, the display will show all the wheel positions that were programmed, the word “ON”, and “PSI” will be displayed, on the screen, and the green LED light will come on (see Figure 3-4).



Figure 3-4

3. If any of the wheel positions are not within the baseline air pressures an alert will be issued by the monitor and the air pressure reading will be shown for the affected tire position and the monitor will show PRESSURE and whether it is a LOW or HIGH warning if HIGH warning has been activated during the programming operation. The audible alarm will be heard (see Section IV for further details about alarms).
4. If the monitor continues to search for a sensor after 10 minutes it is possible that the sensor may not be programmed properly. Higher radio frequency (**RF**) transmissions travel mostly via straight lines and along line-of-sight pathways. The **360SL** sensors are required to accomplish the difficult task of transmitting a low power FCC approved signal from vehicles' tires to the monitor. If a sensor fails to be recognized, move the monitor slightly. The vehicle could be in what is known as a "Dead Zone", this is where the signal is not able to travel because of its surroundings (pole barn siding, metal fence, side of a building). Moving the vehicle just a few feet can sometimes overcome this problem. The sensor will need to be removed and re-installed to activate the sensor for it to report quickly to the monitor. If you are using an optional **360SL** booster kit, reposition the booster for a possible better reception.

NOTE:  An alert indicates that you are operating your vehicle in a dangerous condition. When the low pressure light illuminates, STOP and check your tire(s) as soon as safely possible, and inflate them to the proper pressure.

NOTE:  The DORAN 360SL will illuminate a flashing low tire pressure warning light and an audible alarm when the inflation pressure in one or both tires is equal to or less than 12.5 % below the programmed baseline air pressure. The warning will continue to illuminate as long as the malfunction exists, whenever the monitor is switched on.

The Doran 360SL will monitor the tractor and the trailer when a trailer has been added to the monitor thru the SL booster. The Doran 360SL has six types of alarm modes. The warning levels are:

- 12.5% below the programmed baseline air pressure for the first low-level alarm.
- The next alarm level is 25% below the programmed baseline air pressure.
- There is also a FAST LEAK warning when 2.8 PSI is lost from the tire in less than 12 seconds.
- The optional HIGH PRESSURE warning can be selected when you program the monitor. This alarm will react when the air pressure increases 25% above the programmed baseline air pressure.
- A LOST SIGNAL alarm when the monitor does not receive the RF signal from the sensor.
- The HOT warning signifies that the sensor is reading a temperature of 248F (120C) around the sensor and could be signaling a suspension / wheel component malfunction for that wheel position.

A. FIRST STAGE ALARM FOR 12.5% LOW AIR PRESSURE:

On a first level low pressure alarm the monitor will alarm at 12.5% below the programmed base line air pressure. When this happens the backlight on the monitor screen will light up. The green LED light will go out, the Red warning light will begin to flash and the audible beeper will cycle at 1 flash or beep per second, the alarmed wheel position will be displayed. The pressure of the low tire, and the words LOW PRESSURE will be displayed on the monitor (see Figure 4-1). Pressing any of the buttons will cause the audible alarm to be silenced. The monitor will continue to display the wheel position, air pressure of the alarmed wheel position and the words LOW PRESSURE until the problem is corrected. If the alarm comes on and the FAST LEAK icon appears (see Figure 4-2), this means the tire is losing air at a rate faster than 2.8 PSI in a 12 second period.

The FAST LEAK icon will only be displayed during the fast leak and will go out 18 seconds after the air quits leaking from the tire. We suggest that the tire be inspected immediately.



Figure 4-1



Figure 4-2

B. **SECOND STAGE ALARM for 25% LOW AIR PRESSURE:**

On a level 2 Low Pressure Alarm the monitor will alarm when the pressure has reached 25% below the programmed baseline air pressure. **The National Highway and Traffic Safety Administration considers a tire flat when the pressure is 25% below the tire manufacturers' recommended operating pressure.** When a tire reaches 25% below the programmed baseline pressure the following happens:

- The green LED will go out
- The Red warning light will begin to flash at 2 times per second
- An audible alarm will beep two times per second
- The alarmed wheel position will be displayed
- The actual pressure will be displayed for the effected tire
- The monitor will also display LOW PRESSURE as in Figure 4-1

The screen will display the same information as a Low Pressure Level 1 Alarm. Pressing any of the buttons will cause the audible alarm to be silenced. The monitor will continue to display the wheel position, air pressure of the alarmed wheel position and the words LOW PRESSURE until the problem is corrected. If the alarm comes on and the FAST LEAK icon appears (see figure 4-2), this means the tire is loosing air at a rate faster than 2.8 PSI in a 12 second period. The FAST LEAK icon will only be displayed when a fast leak is detected and will go out 18 seconds after the air quits leaking from the tire. We strongly urge you to pull over and inspect the possible tire damage immediately.

 **When the low pressure light illuminates, STOP and check your tire(s) as soon as safely possible, and inflate them to the proper pressure.** Driving on a significantly under-inflated tire can cause the tire to overheat and lead to tire failure. Under-inflation also reduces fuel efficiency and tires tread life, and may affect the vehicles' handling and stopping ability.

C. **High Pressure Alarm:**

The Doran **360SL** monitor is capable of monitoring for a High Pressure Warning. This is a warning that is displayed when the baseline air pressure is exceeded by 25%. When this happens the Green light will go out. The audible beeper will beep once per second and HIGH PRESSURE will be displayed on the monitor screen (see Figure 4-3). This can be caused by extreme heat generated into the tire.



Figure 4-3

 **When the High-Pressure warning appears, STOP and check your tire(s) as soon as safely possible, and check for the possible cause.** This can happen because of a dragging brake, bad wheel bearing, extreme temperature conditions, or other mechanical failures that you might not detect. It is suggested that you check the suspect tire position for a possible mechanical failure.

D. **Lost Signal Alarm:**

The Doran 360SL monitor is capable of monitoring for a lost sensor signal (see Figure 4-4). If the monitor is unable to receive a signal from a sensor for more than 18 minutes an alarm will be displayed for that sensor. This does not mean that the sensor is missing, just that a signal was not able to get to the monitor. This could be from other signals interfering with the sensor signal, interference from structures, or a poor signal. By FCC rules we must allow signals from other sources to interfere with our signals. The Doran 360 series sensors, as well as all the other TPMS systems on the market are not allowed to interfere with other radio frequency (RF) signals.



Figure 4-4

E. HOT Warning Alarm

The HOT warning alarm is issued when the sensor senses a temperature that is greater than 248 Degrees F (120C) around the sensor and could be signaling a suspension / wheel component malfunction for that wheel position (**see Figure 4-5**). The electronic components in the sensor are tested to withstand temperatures of 257°Fahrenheit (125°C). We have built into the system this warning for sensor safety and also the safety of the driver. With the sensor being attached to the exterior of the wheel we believe that if the sensor sees the 257°Fahrenheit temperature that there could be a malfunction to the components of this wheel position. We would expect a bad bearing or brake sticking in this position causing the excess heat.



Figure 4-5



When the HOT warning appears, STOP and check your tire(s) as soon as safely possible, and check for the possible cause.



NOTICE: A "LOW PRESSURE" warning will over-ride a "HOT" warning because of the potential danger of a low tire.

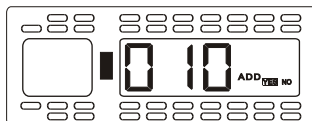
A. 360SL Drop and Hook Feature

The SmartLink Drop and Hook system allows the tractor's monitor, to connect and monitor any trailers' tire positions that have the SmartLink Booster and sensors attached to the trailer.

When the tractor does not have any trailer associated with the monitor, the monitor will look for a trailer that is under power that has the SmartLink system on it and display the ADD icon to the monitor's display. The operator will have the opportunity to add or not add the trailer. The monitor will store up to 5 of the most recent received trailer numbers in the monitor for the operator to select. During the "add" or "drop" mode, the monitor is unable to show pressures or issue an alarm.

The process to hook up a trailer is as follows:

- Hook up the trailer as it is usually done. When the power to the trailer is connected the SmartLink Booster will begin to transmit a special signal that the tractor's monitor can receive. The signal that is received will contain all of the specification information from the SmartLink booster. This includes the trailer number, wheel sensor ID numbers, programmed baseline pressures, air pressure, and sensor temperature. The monitor's green light will go out, the trailer outline and the trailer's wheel positions will be flashing and the (YES) will be flashing alternately with the last three digits of the trailer number where the pressures are displayed.
- This signal can only be received from the booster for 5 minutes. Trying to access this trailer number after the initial 5-minute period after connecting the power to the trailer will require the operator to disconnect and re-connect the trailer power.
- The last 5 different received SmartLink Boosters' RF signals will be accessible on the monitor. The monitor will receive the latest trailer information from each booster received, and the trailer numbers will be displayed on the monitor using the up and down arrow buttons to select a trailer number. The oldest of 5 numbers will be dropped if a new 6th number is received.
- If a trailer selection is not made during the 5 minutes that the special signal is transmitted from the SmartLink booster the monitor will automatically return to the normal mode of operation so pressures and warnings can be monitored.
- When the trailer ID number is displayed on the monitor after the power is connected, the operator can press the **SET** button until the display flashes and beeps twice to signal the trailer number has been accepted. During the time the **SET** button is pressed the trailer number will be displayed on the monitor so the operator can be sure that they are locking the proper trailer to the monitor. If the trailer number is not displayed, pressing the down arrow button will advance to the next newest trailer number. The monitor has enough memory to retain the 5 most recent trailers received. If you do not find the trailer number that you are looking for on the list, the operator will need to unplug the trailer and then re-plug the power to the trailer. This will cause the booster to transmit the special information signal again and the trailer number should be displayed on the monitor screen.

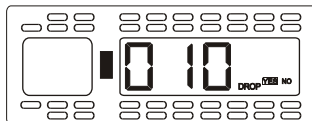


Once the trailer has been accepted and locked to the monitor it will take up to 6 minutes for the new trailer tire pressure information to be transmitted to the monitor. When all of the information has been updated the display will show the “ON” and the green light will illuminate if all tires are within the programmed base line pressures.

6. A new trailer cannot be accepted if the previous trailer has not been dropped. See the next section to drop a trailer.

The Process to Drop a trailer is as follows:

1. When the trailer is detached from the tractor the trailer will lose its power and a “keep alive” signal will no longer be transmitted to the monitor.
2. After 90 seconds the monitor will then prompt the operator if he wants to DROP the trailer. The green light will go out, the trailer outline and the trailer’s wheel positions will be flashing and the NO will be flashing alternately with (- -) where the pressures are displayed.
3. If the operator wants to disconnect from the trailer, they must switch the “NO” to a “YES” by using the left and right arrow buttons. Then press the **SET** button until the beeper sounds twice to complete the selection. The trailer and all wheel positions for the trailer will disappear and the monitor will return to the normal mode of operation and ready to receive a new “ADD” signal from a SmartLink booster.
4. If the operator selects NO and presses the **SET** button, the trailer and wheel positions will still be shown and will not be deleted. If the power has been disconnected and the booster cannot transmit a signal, the monitor will periodically prompt to “DROP” the trailer until the “YES” is selected and the **SET** button is pressed. The monitor will beep twice and the trailer and wheel positions disappear from the monitor screen. The trailer is now dropped.
5. If the SmartLink Booster signal returns while the display is requesting to DROP, and the **SET** button has not been pressed, the monitor will return to the normal operation. This could happen if a temporary loss of signal occurs while the system is hooked up.



B. System Reset Function



The monitor can be reset to the factory defaults in one easy step. This will erase all of the serial numbers from the memory of the monitor and will then need to be re-programmed in order for the monitor to read the sensor signals.



Be sure this is what you want to do before you proceed.

- Press and hold the **PROG** button for 15 seconds. A single beep will be heard. This will erase all trailer sensor information and clear the monitor memory of the last connected booster information. Continue to press the **PROG** button for an additional 15 seconds (30 seconds total) will cause the monitor to beep again and return the monitor to its factory defaults and no sensors will remain in the monitors memory.

C. Stored Alarm Information

The Doran **360SL** has the ability to store the last 10 alarm faults that have occurred. They cannot be erased; they can only be replaced by newer, more recent alarms. This can be useful if a history of alarms is necessary. Monitoring the warnings and when they occur is a useful tool for the over the road trucking industry. To enter this function, press the **PROG** and **SET** buttons together for 3 seconds. A number 1 will be displayed on the screen (see **Figure 6-1**). If no other buttons are pressed within 1 second the monitor will automatically start to show the last alarm and then will show up to the last ten alarms that have occurred from the most recent to the oldest. If you press the right arrow button after you enter this mode you can select which alarm fault number you wish to review. Each fault display will last 3 seconds and then there will be a 1 / 2second pause between each display. The display will show as follows:

Figure 6-2 Actual pressure for the alarm

Figure 6-3 M07 is for the 7th month or July.

Figure 6-4 d04 is for the 4th day of the month

Figure 6-5 Y06 is for the year 2006

Figure 6-6 h14 stands for 2:00 PM (24 hour clock)

Figure 6-7 m33 stands for 33 minutes

When you have finished checking the alarm history the **PROG** and **SET** buttons can be pressed together for three seconds to return to the normal operation mode.

D. Backlight on for night operation

The backlight will automatically come on for any alarm or if you are viewing the wheel positions in the normal operation mode. The light does not remain on in the normal operation mode when “ON” is being displayed. To turn on the Backlight press the **SET** button in normal mode and press it again to turn the backlight off.



Figure 6-1

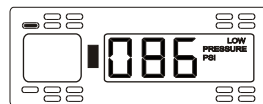


Figure 6-2



Figure 6-3



Figure 6-4

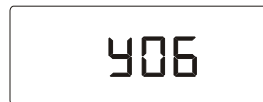


Figure 6-5

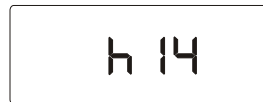


Figure 6-6



Figure 6-7

E. Viewing individual tire position air pressures

In order to view the individual tires' air pressure the operator must press any arrow button. This will cause the "ON" to change to an air pressure reading for the highlighted tire position shown on the display, and if all tires are with-in the parameters of the baseline air pressure the green light will continue to stay on to signal the all is "good". By pressing the up, down, left, and right arrow buttons you can navigate thru all of the programmed wheel positions to read the pressures. Or you can just press the up or down arrow button and the monitor will cycle thru all the wheel positions that are programmed in the monitor. When you are done you can press the SET button momentarily to return the monitor to showing "ON" if all pressures are with-in the proper range.

VI. FAQs AND TIPS

A. FREQUENTLY ASKED QUESTIONS**WHY DID I FAIL TO GET A SIGNAL FROM A SENSOR DURING INSTALLATION?**

Higher radio frequency (RF) transmissions travel mostly via straight lines and along line-of-sight pathways. The 360SL sensors are required to accomplish the difficult task of transmitting a low power FCC approved signal from vehicles' tires to the monitor. If a sensor fails to be recognized, move the monitor slightly. The vehicle could be in what is known as a "Dead Zone", this is where the signal is not able to travel because of its surroundings (pole barn siding, metal fence, side of a building). Moving the vehicle just a few feet can sometimes overcome this problem. The sensor will need to be removed and re-installed to activate the sensor for it to report quickly to the monitor.

WHY DOESN'T MY MONITOR TURN ON?

If the monitor only turns on when the vehicle is running, the red and blue wires have been connected to a switched power source. The red wire should be connected to a non-switched 12-volt positive line. The blue wire should be connected to a switched 12-volt positive lead when the key is turned on, and the black wire should be connected to a good ground. Check the hard-wired system to the vehicle's wiring, be sure the ignition switch is "on" and check to see if either of the fuses that may have been installed inline have blown. Replace all fuses with a 2 or 3-amp Fast-blow fuse.

HOW DO I MUTE THE AUDIBLE ALERT?

Press any button after the alert sounds. This will put the alert in the Quiet Mode. The green light will have turned off, the alert will be displayed on the screen, and the backlight will be lit. This will continue until the alarm has been corrected.

WHAT IF THE GREEN LIGHT ON MONITOR DOES NOT LIGHT?

If the green light on monitor does not come on it can signify that something is not correct with the settings that were input during setup to the monitor. Review the information on the display and if a proper air pressure is being displayed be sure that the baseline for the displayed wheel position was entered correctly.

CAN I STORE MY VEHICLE LONG TERM WITH THE MONITOR ON?

The monitor draws less than 70mA of power when it is under power and in the sleep mode. When the monitor is fully functional with alarms it can draw up to 125 mA. The monitor could drain vehicle's battery over an extended period of time. Hooking the monitor up to enable the sleep mode will drastically reduce the power consumption over a long period. If storing for over 3 months, you might consider removing the sensors for storage. (TIP: Clean egg cartons or plastic bags work well for storing the sensors.) Each Sensor has it's own serial number laser etched into the cover. Be sure to enter these ID numbers in the diagram on page 7 so sensors can be replaced on the same tire location when re-installing them, eliminating the need for reprogramming. If a low-pressure alert is given while in storage, the sensor will alert until the pressure is corrected and could dramatically affect the battery life of the sensors. Sensor will shut down and stop transmitting when less than 10 lbs of air pressure are present. When putting system back on, power monitor first, and then screw sensors onto their original wheel locations. Pressure reading will display within a few minutes on the monitor. Your 360SL system will now be active.

HOW DO I CHECK THE TIRE PRESSURES? -The pressures are updated to the 360SL Monitor every 6 minutes under normal circumstances. With the monitor in Normal Mode, press the **SET** button and then press the arrow buttons in order to select a tire's current pressure to display. When you have finished your inspection simply press the set button again to return the monitor to the normal mode. A change in pressure will cause the sensor to send an updated signal immediately and not wait for the 6-minute interval.

WHAT HAPPENS WHEN I REMOVE THE SENSORS TO INFLATE OR CHECK THE PRESSURE IN MY TIRES? It is recommended that tire pressures be checked regularly using a quality pressure gauge when the tires are at ambient temperatures. Remove the sensor, check pressure, and inflate if necessary. When you return the sensor to the valve stem, the sensor will begin to read the current pressure and return to its normal operation.

HOW DO I DELETE A SENSOR?

See page 11 for full details on sensor deletion.

WHAT SHOULD BE DONE IF A LOW PRESSURE ALERT IS SOUNDED?

Pull over as soon as safely possible and check low tire. Physically check tire and repair. Be sure to check valve stem for damage. Soap stem to identify any leaks.

WHAT MAKES MY SYSTEM SENSORS TRANSMIT?

Sensors will transmit data to the monitor under the following conditions:

1. Sensors update with a signal every 6 minutes.
2. Sensors transmit any change of pressure recognized from the static pressure.
3. Sensors transmit when temperatures reach 248F (120C).

WHAT CAUSES THE MONITOR TO DISPLAY ALARMS?

1. Air pressure has dropped 12.5% of your baseline tire pressure. This alert will continuously transmit once per second until low pressure is corrected or a button is pressed to place Monitor in **Quiet Mode**.
2. Air pressure has dropped to the second alert level, 25% under your programmed pressures. Alert will transmit twice per second until the pressure is corrected or a button is pressed.
3. A sensor is removed from its tire.
4. Air pressure is released from the tire at a rate faster than 2.8 psi in less than 12 seconds. This will initiate a fast leak alert.
5. The sensor has detected an elevated temperature of 248F (120C).
6. The sensor has detected a pressure that is 25% greater than the baseline pressure programmed into the monitor. This will only occur when the optional HIGH-pressure alert is selected during programming.

DO I NEED TO REBALANCE MY TIRES WHEN USING A SENSOR?

The 2/3 oz. sensor on a typical large truck will not normally necessitate rebalancing tires. Smaller automotive tires may require rebalancing.

WHAT SHOULD I DO IF A SENSOR IS LOST OR DAMAGED?

If a Sensor is lost or damaged and needs replacing, call Doran Mfg. LLC toll free at 1-866-816-7233 to order a new Sensor.

MY SENSOR WAS BLOWN OFF (BLOWOUT) WITH NO ALERT GIVEN

Instant tire failure is rare in comparison to the more common failure caused by gradual tire deflation. It is possible, during an instantaneous blowout, to have the sensor blown off the tire before it has had a chance to send a signal to the monitor. The **360SL** is not designed for this type of tire failure. Tire failure referred to as a blowout, is commonly due to low tire pressure resulting in an overheating of the tire sidewalls to the point of disintegration. The DORAN 360SL is designed solely to monitor tire pressure. It is not designed to provide warning of a potential or actual tire blowout.

B.TIPS

TIRE CONDITION:  Conduct a regular visual inspection of the vehicles tires. **The sensors are not a substitute for proper tire maintenance and it is the user's responsibility to maintain proper amounts of tire pressure and respond accordingly to warnings and alerts.** Low tire pressure is not the only problem associated with tires. Therefore, symptoms such as bulges, uneven tread, abnormal noise, etc. should **immediately** be brought to the attention of a professional.

ROTATING/REPLACING TIRES: When rotating or replacing tires, mark wheel location of each sensor. Remove sensors and store in bags or in an egg carton until work is done, and then return the sensors to their original wheel location. You can also delete the sensor positions on the Monitor (**page 11**), and reinstall the sensors per the instructions on **page 5**.

RF (Radio Frequency) PRODUCTS: The **Doran 360SL** utilizes RF technology to transmit a signal between the sensor and the monitor. Therefore signals are subject to interference from many types of signals and products, which can cause errors in the operation of the product. As with cell phones and other types of electronics using RF signals, signal interruption can occur and cause a lost signal transmission.

COOL TEMPERATURES AND HIGH ALTITUDE:

These conditions may cause tires to lose pressure. If a tire is close to its low-pressure level, an alert can be sounded when pressure drops overnight due to cooler temperatures. Inflate to proper level in the morning.

C. LIMITED WARRANTY

ONE YEAR LIMITED WARRANTY: Subject to the limitations and exclusions set forth in this Limited Warranty, the DORAN 360SL is warranted against defects in material or workmanship that result in a product failure under normal use during the one-year period following the date of purchase by the original end-user. This Limited Warranty applies only to claims made by the original end-user and cannot be assigned, transferred or conveyed to any subsequent users. The exclusive remedy for any product determined by DORAN Mfg. LLC to be defective within such period shall, at the sole option of DORAN Mfg. LLC, be the repair or replacement of such defective product, or the refund of the purchase price therefore. No other remedy shall be available.

EXCLUSIONS FROM COVERAGE: This Limited Warranty does not apply to any claims arising from misuse, abuse, unauthorized repair or alteration, circumstances where the DORAN 360SL is improperly installed or improperly wired contrary to the DORAN 360SL product instructions; or damage or defect attributable to fire or other casualty, including, without limitation, acts of God or exposure to abrasive or corrosive materials or pollutants, or attributable to collision or other accidents involving vehicles upon which the DORAN 360SL is installed.

LIMITATIONS: THIS LIMITED WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF DORAN MFG. LLC. THIS LIMITED WARRANTY SPECIFICALLY EXCLUDES ALL INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES. IN NO EVENT, AND FOR NO CAUSE WHATSOEVER, SHALL DORAN MFG. LLC HAVE ANY LIABILITY TO ANY PARTY IN EXCESS OF THE ORIGINAL PURCHASE PRICE OF THE PRODUCT IN QUESTION.

EXCLUSIVE AGREEMENT: This Limited Warranty is a complete and exclusive statement of the warranties which apply to the DORAN 360SL. There are no express or implied warranties beyond those expressly stated above. No employee, agent, dealer or other person is authorized to give any warranties on behalf of DORAN Mfg. LLC, except as authorized in writing.

STATUTE OF LIMITATIONS. In purchasing the DORAN 360SL you agree that any action for breach of contract or warranty must be commenced within one year after the cause of action has accrued.

PROCEDURE: Products determined to be defective within the terms of this Limited Warranty should be returned to Doran Mfg. LLC, transportation prepaid. Call DORAN Mfg. LLC for return authorization. No unauthorized returns shall be accepted. Sender is responsible for all costs incurred in the removal or reinstallation and shipping of the returned product. A copy of the sales slip from the point of purchase must accompany the returned product.

APPLICABLE LAW: The internal laws of the State of Ohio, U.S.A. shall govern this Limited Warranty, and the exclusive venue for any dispute in connection with the purchase or use of the product shall be the state and federal courts of general jurisdiction located in Hamilton County, Ohio U.S.A.

SPECIAL NOTICE TO CONSUMERS: If you have purchased this product for person, family or household use:

- (1) Some states do not permit disclaimers or term limitations of implied warranties so that the disclaimers and limitations in this Limited Warranty may not apply to you;
- (2) Some states do not permit the exclusion or limitation of incidental or consequential damages so that the exclusions and limitations in this Limited Warranty may not apply to you; and
- (3) This Limited Warranty gives you specific legal rights and you may have other rights that vary from state to state.

For Warranty Return Authorization

Call Toll Free: 1-866-816-7233

D.SPECIFICATIONS**SENSOR**

Sensor Transmit Range	Approx.130' (line of sight)
Operating Frequency	434.1 MHz FM
Operating Temperature Range	-40 F to +257F
Storage Temperature Range	-40F to +257F
Sensor Weight	Approx .85 oz
Sensor Dimensions	1.31" h x 1.16" diameter
Sensor Batteries	Internal, non-rechargeable
Sensor Pressure Range	10 to 188 psi +/- psi over operating pressure range
Sensor Low Voltage Shutdown	2.2 Volts

MONITOR

Monitor Power Requirements	12 VDC; typically draws <70 mA in the standby mode. < 100 mA when Alarmed.
Monitor Dimensions	5.7" w x 2.165" h x 1.1" d
Monitor Weight	5.4 oz
Monitor Power Cord Plug	hard wire
Monitor Tire Positions	1 to 38 positions
Sensor Alarm Trigger Settings	12.5% and 25% below the original tire inflation level

Doran 360SL systems comply with Part 15

Class B of the FCC Rules.

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.**OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS****(1)THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND****(2)THIS DEVICE MUST ACCEPT ANY INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION**

THE DORAN **360SL** IS A DEVICE FOR DISPLAYING TIRE PRESSURES. AS WITH ALL DEVICES THAT USE RF SIGNALS, THE SIGNAL CAN BE INTERRUPTED. THE DORAN **360SL** HAS BEEN DESIGNED TO WORK OPTIMALLY TO OVERCOME THE INTERFERENCE THAT CAN BLOCK RF SIGNALS. AS WITH ALL RF PRODUCTS, NO SIGNAL GUARANTEE CAN BE MADE.

